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Caught Between Fire and Flood: Navigating Anti-Synthetase Syndrome, ILD, and Dengue in a Spiraling Storm

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Abstract

We report a complex case of a middle-aged female with interstitial lung disease (ILD), rheumatoid arthritis, and hypothyroidism who presented with dengue fever. Her course was complicated by leukopenia, thrombocytopenia, and acute respiratory distress syndrome (ARDS) on the background of ILD. Overlapping features of dengue and autoimmune disease delayed recognition of underlying Anti-Synthetase Syndrome, a rare autoimmune disorder characterized by ILD, arthritis, and myositis-specific antibodies. Initiation of immunosuppressive therapy was deferred due to dengue-associated cytopenias, posing significant management challenges. After stabilization, she was started on cyclophosphamide with gradual improvement. This case underscores the diagnostic dilemmas and therapeutic challenges of managing tropical infections in patients with underlying autoimmune disease.

Keywords: Antisynthetase syndrome, tropical infections, ARDS , diagnostic dilemmas

1. Introduction:

Antisynthetase syndrome is a rare autoimmune condition characterized by the presence of autoantibodies against aminoacyl-tRNA synthetases ,most commonly anti-Jo-1[1,2]. It is considered a subset of idiopathic inflammatory myopathies and presents with a constellation of clinical features, including inflammatory myopathy (polymyositis or dermatomyositis), interstitial lung disease (ILD), arthritis, Raynaud's phenomenon, fever, and "mechanic's hands" (hyperkeratotic, cracked skin on the fingers)[3,4].

The syndrome often has an insidious onset, and ILD is a major determinant of morbidity and mortality. Antisynthetase prevelance is found to be 1-3 people per 1,00,000 worldwide , however precise data is not available[5] . In India and the South Asian region, epidemiological data are limited, but hospital-based studies suggest a rising recognition of the condition, likely due to improved diagnostic capabilities. However, underdiagnosis remains a concern due to overlapping features with other connective tissue diseases and limited availability of specific autoantibody testing in resource-limited settings.

In tropical regions, antisynthetase syndrome often mimics common infections such as tuberculosis, viral myositis, or tropical fevers like dengue and chikungunya, due to shared symptoms such as fever, myalgia, fatigue, and elevated inflammatory markers[6,7]. This overlap can lead to significant diagnostic delays and mismanagement. Moreover, the coexistence or recent history of infections like dengue poses a clinical challenge, as the initiation of immunosuppressive therapy crucial for controlling autoimmune inflammation can worsen viral illnesses or predispose to secondary infections. This creates a therapeutic dilemma where delaying immunosuppression risks disease progression (especially ILD), while early treatment may carry infectious risks, necessitating a careful, individualized approach and multidisciplinary coordination.

This case report highlights the need of suspicion and early rheumatology workup in a patient with RA , ILD . Also the difficulty in treating such patient with super added dengue co infection with complicated ARDS upon ILD , bleeding secondary to Dengue fever which worsened and progressed to Dengue shock syndrome and Further worsened to hemorrhagic shock.

Case Presentation:

A 43-year-old female , resident of costal Karnataka , southern part of India , presented to the hospital with complaints of fever , rashes and shortness of breath. Examination findings included patichae over both upperlimbs . Palms had classical mechanic hand features including Keratosis , fissuring , scaling, hyperpigmentation. Auscultation of lung fields showed fine Crepts over the infrascapular , mammary and axillary areas.

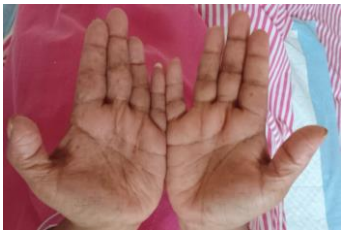

Image 1 : palmar aspect of the hand showing hyperkeratotic lesions and cracks

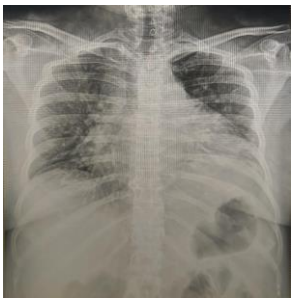

Image 2. Chest X- Ray [AP view] showing bilateral infiltrates

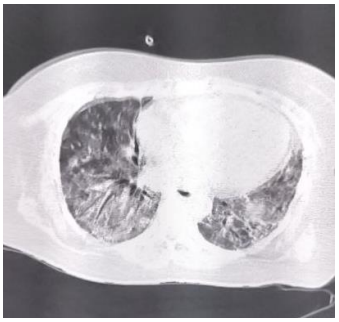

Image 3. HRCT Thorax - NSIP pattern of ILD ?Early ARDS features

Lab findings

Hemoglobin	14.6 g/dl
Total counts	4460 cells / microlitre
Platelet counts	7000 cells / microlitre
PCV	37%
S. Ferritin	688.4
SGOT	184 IU / L
SGPT	47 IU / L
LDH	702 U/L
aPTT	Prolonged
INR	1.2
NS1 antigen for Dengue	Reactive
D- dimer	270 ng/ml

Radiological imaging of the chest with Xray showed lower zone reticulo nodular patterns , suspecting ILD with early ARDS .A HRCT thorax was done , showing reticulations , ground glass opacificities and architectural distortion with traction bronchiectasis in both the lungs having symmetric distribution (Right > Left) with subpleural and basal predominance – NSIP pattern of ILD ?Early ARDS features . Ultrasonography of abdomen showed thickened and Edematous gall bladder wall, minimal ascites, minimal b/l pleural effusions . Echocardiography concentric LVH with normal LV function.

Patient was started on supportive management for Dengue with a restricted fluid strategy in view of early signs of ARDS . Patient was initiated with intermittent BiPAP support for respiratory distress secondary to ARDS . FFPs were transfused since following days she developed elevated INR. Screening for Antisynthatase syndrome reports revealed positive for the same. To initiate immunosuppresive therapy

with Cyclophosphamide as ILD was rapidly progressing was difficult . So under antibiotics coverage patient was continued on Corticosteroids as the supportive management.

Supportive care , Restrictive fluid strategy , Corticosteroids with Antibiotics coverage, Physiotherapy helped in improvement of the patients condition. Further lab workup showed improvements in blood parameters including resolution of Anemia, thrombocytopenia, normalisation of INR, decreasing CRP levels and clearance of ARDS features on Chest xray . Once the clinical condition improved was started on Cyclophosphamide therapy for Antisynthatase syndrome. Then she was discharged with Corticosteroids , Immunosupprents. Further follow ups patient was better and improved with Cyclophosphamide therapy.

Discussion

Antisynthetase syndrome (ASS) represents a rare and complex subset of idiopathic inflammatory myopathies [1,8] , notable for its heterogeneous presentation and the presence of specific autoantibodies such as anti-Jo-1. The clinical presentation of myositis, interstitial lung disease (ILD), and arthritis, alongside features such as mechanic's hands and fever with a reactive test for a tropical infection such as dengue can easily direct the clinician from focusing on the underlying disease.

Our patient, was diagnosed as seropositive arthritis (Rheumatoid arthritis and ILD), presented with signs and symptoms typical of a tropical febrile illness fever, rash, bleeding (gum bleeds) and was initially diagnosed and treated as a case of dengue fever. The overlapping clinical spectrum between Antisynthetase syndrome and dengue fever particularly fever, myalgia, rash, and elevated inflammatory markers can easily lead to misdiagnosis or delay in recognizing the underlying autoimmune pathology.

This case highlights the diagnostic conundrum often encountered in tropical countries where infectious and autoimmune etiologies frequently mimic one another. Of particular concern was the progression to acute respiratory distress syndrome (ARDS) in the background of ILD, a life-threatening complication that demanded careful fluid management and non-invasive ventilation. The co-existence of thrombocytopenia and elevated INR due to dengue hemorrhagic features further complicated the clinical course, limiting the initiation of immunosuppressive therapy which is the cornerstone of managing Antisynthetase syndrome. Timely recognition of the "mechanic's hands" and a high index of suspicion based on her background illness prompted testing for antisynthetase antibodies, which confirmed the diagnosis.

The patient was managed conservatively for dengue while initiating corticosteroids under antibiotic coverage, a strategy that proved to be both life-saving and effective in halting the autoimmune progression. Once stabilized, she tolerated cyclophosphamide [9] induction well, with significant clinical and radiological improvement.

This case underscores several critical teaching points:

1. The importance of maintaining a high index of suspicion for connective tissue disease in patients with atypical or refractory presentations of common tropical infections.

2. The need for early rheumatology consultation in known RA or ILD patients presenting with systemic features suggestive of autoimmune flare or transformation.

3. The careful balance between treating autoimmune disease and managing concurrent infections in immunocompromised or high-risk patients.

4. The utility of a multidisciplinary approach—including pulmonologists, intensivists, rheumatologists, and infectious disease specialists—in managing complex cases with overlapping pathology.

Overall, this case illustrates the diagnostic and therapeutic complexity posed by antisynthetase syndrome, especially in the presence of superadded tropical infections like dengue, and highlights the potential for recovery with timely, coordinated, and individualized care.

Conclusion

This case exemplifies the diagnostic and therapeutic challenges posed by antisynthetase syndrome, particularly in the setting of concurrent tropical infections like dengue fever. The overlapping clinical features delayed recognition of the underlying autoimmune process, risking significant morbidity. However, timely clinical suspicion, multidisciplinary coordination, and judicious use of immunosuppression under close monitoring led to a favorable outcome. This underscores the importance of considering autoimmune etiologies in patients with pre-existing rheumatological conditions who present with atypical or complicated febrile illnesses, especially in endemic regions.

Declarations

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